NAME: DATE:

Unit-2 Mastery Assessment (version 605)

Question 1 (10 points)

Let f represent a function. If $f[11] = 14$, then there exists a knowable solution to the equation below.

$$y = \frac{f\left[\frac{x+24}{3}\right] + 20}{2}$$

Find the solution.

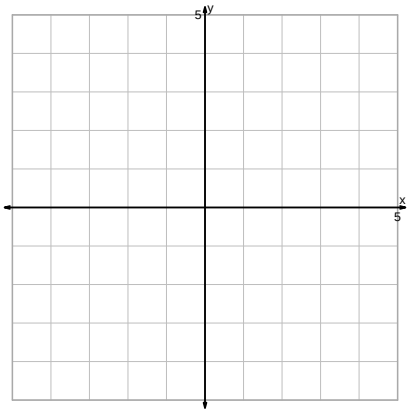
$x =$

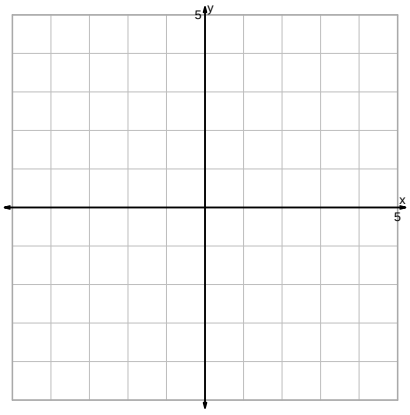
$y =$

Question 2 (20 points)

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

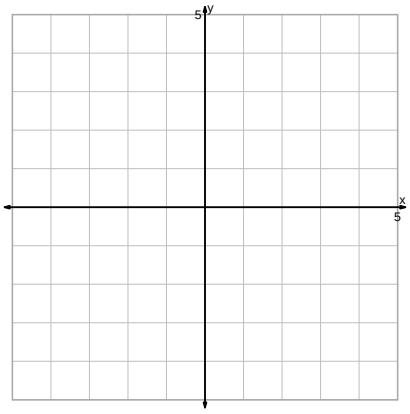
$y = 2 \cdot \sqrt{x}$

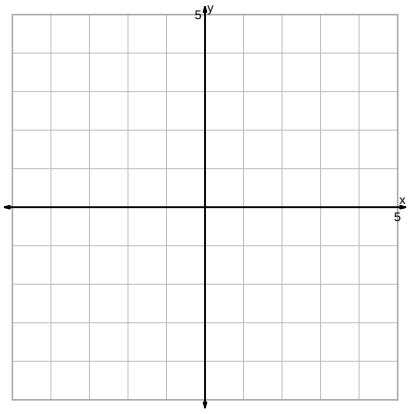




$y = \left(x - 2\right)^3$

$y = \left(x + 2\right)^2$

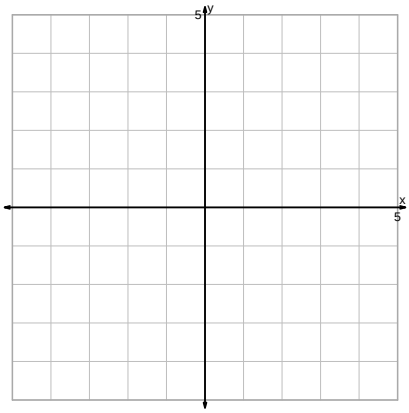


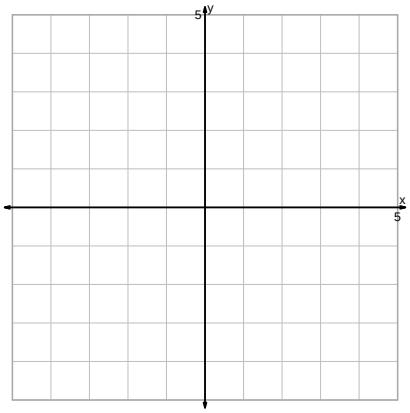


$y = \log_2\left(-x\right)$

Question 2 continued...

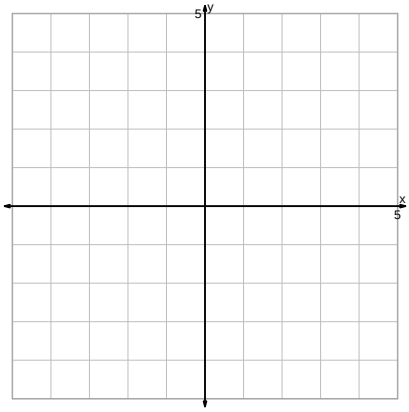
$y = \log_2(x) - 2$

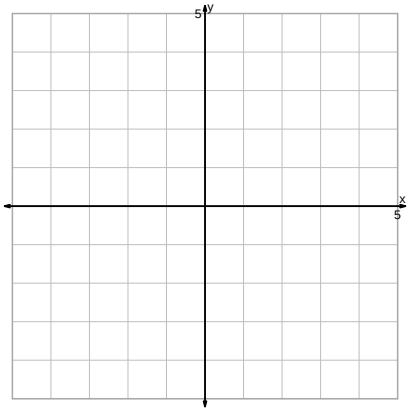




$y = (2x)^3$

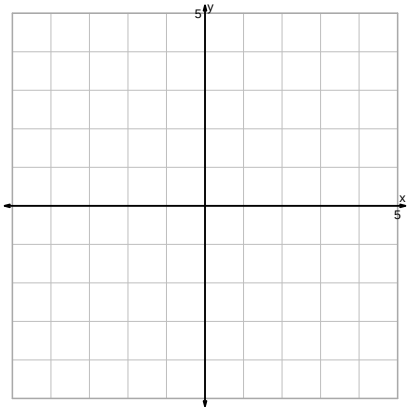
$y = -\sqrt{x}$

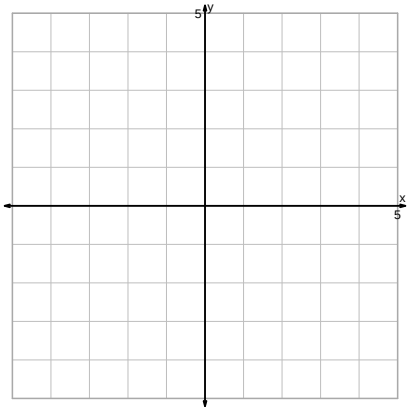




$y = \frac{\sqrt[3]{x}}{2}$

$y = 2^x + 2$

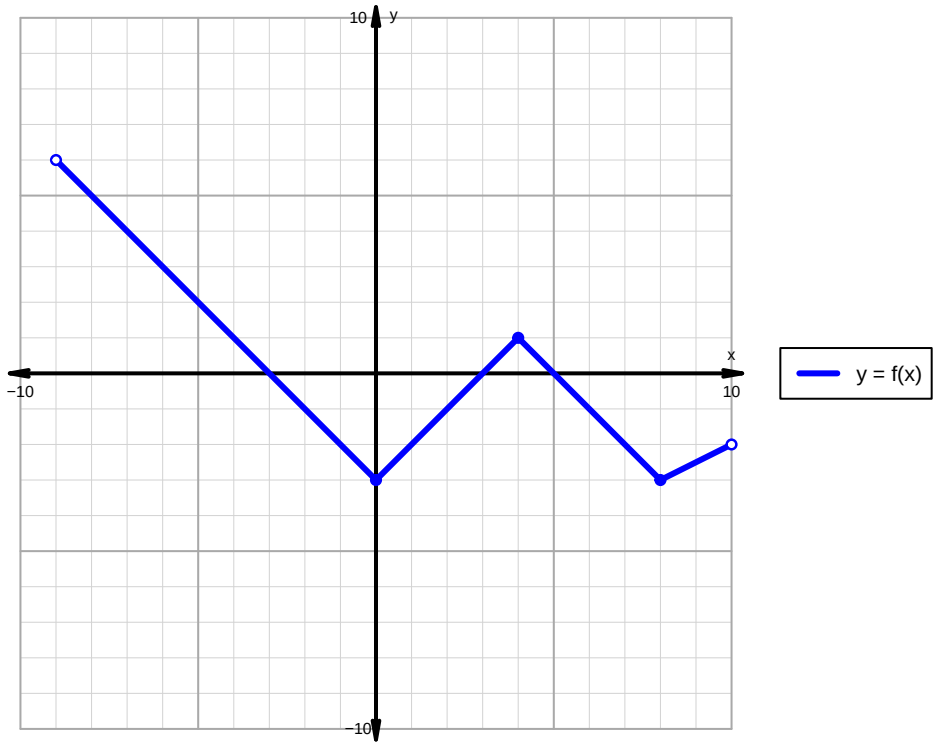




$y = \sqrt[3]{\frac{x}{2}}$

Question 3 (20 points)

A function is graphed below.



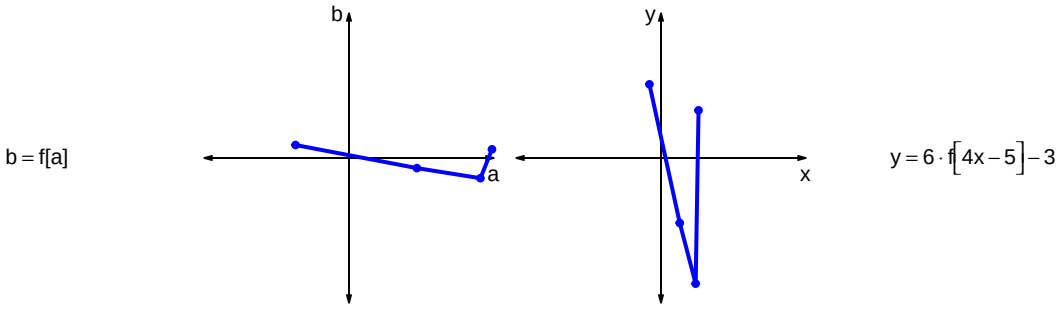
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4 (20 points)

Let f represent a function. The curves $b = f[a]$ and $y = 6 \cdot f[4x - 5] - 3$ are represented below in a table and on graphs.

a	b	x	y
-37	9	-8	51
47	-7	13	-45
91	-14	24	-87
99	6	26	33



a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = 6 \cdot f[4x - 5] - 3$?

Question 5 (10 points)

A parent square-root function is transformed in the following ways:

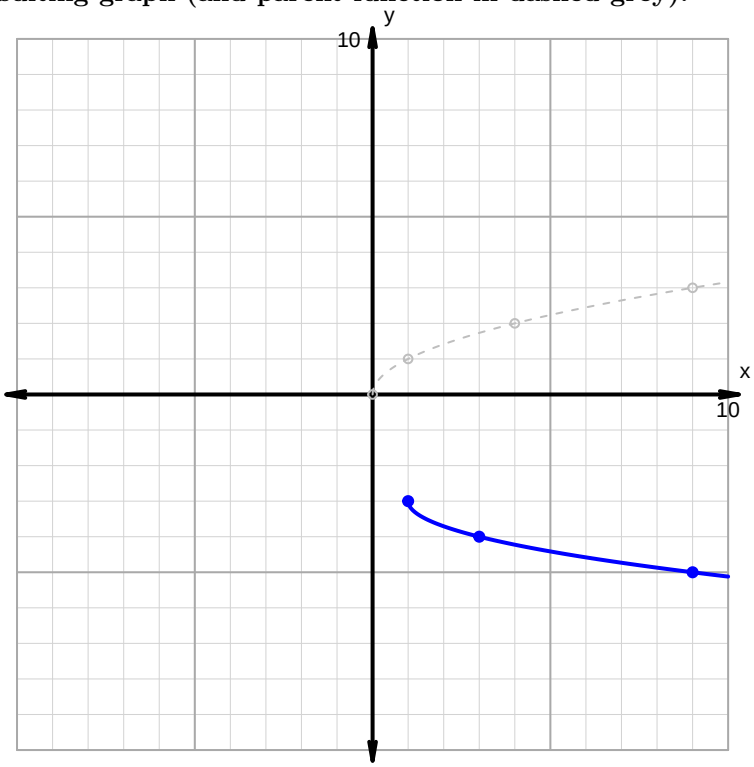
Horizontal transformations

1. Horizontal stretch by factor 2.
2. Translate right by distance 1.

Vertical transformations

1. Vertical reflection over x axis.
2. Translate down by distance 3.

Resulting graph (and parent function in dashed grey):

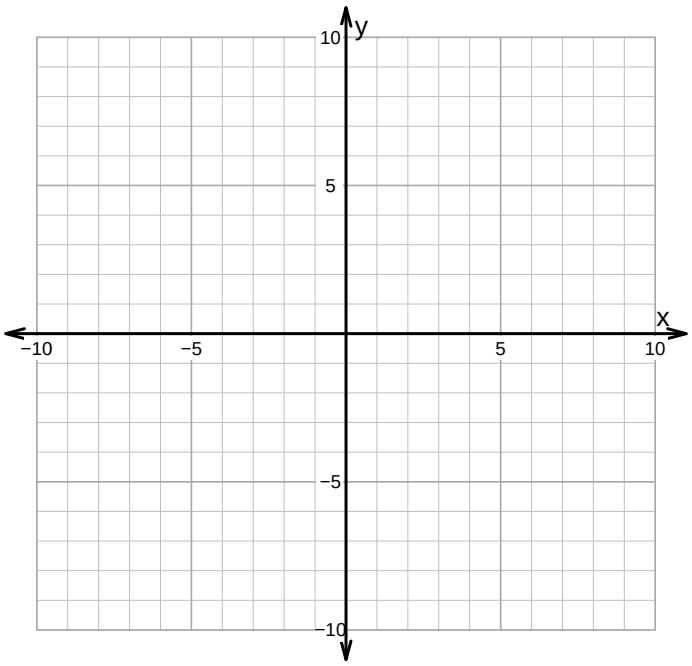


- What is the equation for the curve shown above?

Question 6 (20 points)

Make an accurate graph, and describe locations of features.

$$y = \frac{-1}{3} \cdot |x - 6| + 1$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	